UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/401,069	09/22/1999	ARA W. NAZARIAN	K35A0545	4147

26332 7590 06/20/2002

WESTERN DIGITAL CORP.
20511 LAKE FOREST DRIVE
C205 - INTELLECTUAL PROPERTY DEPARTMENT
LAKE FOREST, CA 92630

EXAMINER	
ONUAKU, CHRISTOPHER O	
ART UNIT	**PAPER NUMBER**
2615	4

DATE MAILED: 06/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No. 09/401,069	Applicant(s) Nazarian et al
	Examiner Christopher Onuaku	Art Unit 2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5)☒ Claim(s) *19-36* is/are allowed.

6)☒ Claim(s) *1-7 and 9-18* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some* c)☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

-a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

U.S. Patent and Trademark Office
PTO-326 (Rev. 04-01) **Office Action Summary** Part of Paper No. 4

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-7&9-10&12-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Singer et al (US 6,314,473).

Regarding claim 1, Singer et al disclose a system for altering inputs, and generating feedforward signals for a dynamic system so as to reduce unwanted vibration in the system, including speeding up computer disk drives by reducing unwanted vibrations which, if unchecked, could lead to disk read/write errors or excessive noise, comprising:

a) first means for defining a higher performance seek operating mode and second means for defining a quiet seek operating mode (see Fig.2&4, disk drive engine 16 which includes codes for generating a GUI for interactively controlling at least one of seek time, noise level, and a power consumption of a disk drive ; controller 29 (FIG.4) of the GUI 27, which is used to alter a seek time and a noise level of disk drive 10, includes the sliding bar 30 and continuum 31: col.6, line 33 to col.7, line 50), here as the sliding bar 30 moves along discrete positions on the continuum 31, between a relatively high noise level/low seek time ("Quick") end 32 (claimed first means) and a relatively low noise level/high seek time (Quiet") end 34 (claimed second means), noise level and seek time are varied inversely along the continuum, meaning that, as the noise level of the disk drive progressively increases, the seek time of the disk drive progressively decreases. Likewise, as the noise level of the disk drive progressively decreases, the seek time of the disk drive progressively increases. By moving sliding bar 30, it is possible to vary both the seek time and the noise level parameters simultaneously;

b) servo means for controlling seek operations, the servo means including means for defining a plurality of seek profiles including a first seek profile defined to provide relatively short average seek times and a second seek profile defined to provide quieter operation in comparison with first seek profile, and means for effecting a seek subject to the first seek profile in response to the higher performance seek operating mode and for effecting a seek subject to the second seek profile in response to the quiet seek operating mode (see Fig.3,4&9, disk drive engine 16 (claimed servo means) which includes codes for generating a GUI for interactively

controlling at least one of seek time, noise level, and a power consumption of a disk drive ; controller 29 (FIG.4) of the GUI 27, which is used to alter a seek time and a noise level of disk drive 10, includes the sliding bar 30 and continuum 31, the window 70, the discussions above and col.6, lines 47-58), here by moving the sliding bar 30 of the controller 29 along the continuum 31, the user can define the desired "Quiet" seek time (claimed second seek profile) or the "Quick" seek time (claimed first seek profile).

Regarding claim 2, Singer discloses a host interface (computer interface) and wherein the second means comprises a first command received by the host interface (see col.8, line 61 to col.9, line 25), here the host is the computer system 2 shown in Fig.2 which includes a number of interface means (e.g., keyboard interface, mouse interface) for generating commands (or inputting desired setting into the GUI of seek time, e.g., "Quiet" seek time) for controlling the disk drive 10 in accordance with the settings in the GUI.

Regarding claim 3, Singer discloses wherein the quiet seek mode is active for executing the first command and the disk drive reverts to the higher performance seek mode after the first host command is completed (see col.8, line 61 to col.9, line 25), here the host is the computer system 2 shown in Fig.2 which includes a number of interface means (e.g., keyboard interface, mouse interface) for generating commands (or inputting desired setting into the GUI of seek time, e.g., "Quiet" or "Quick" seek time) for controlling the disk drive 10 in accordance with the

settings in the GUI. That is, when the "Quiet" seek operation is completed, for example, the user can change the settings to "Quick" seek time operation, as desired.

Regarding claim 4, Singer discloses wherein the disk drive remains in the quiet seek mode after executing the first host command (see col.8, line 61 to col.9, line 25), here the host is the computer system 2 shown in Fig.2 which includes a number of interface means (e.g., keyboard interface, mouse interface) for generating commands (or inputting desired setting into the GUI of seek time, e.g., "Quiet" or "Quick" seek time) for controlling the disk drive 10 in accordance with the settings in the GUI. That is, when the "Quiet" seek operation is completed, for example, the user can change the settings to a different seek operating or remain in "Quiet" seek operation, as desired.

Regarding claim 5, Singer discloses wherein the first means comprises a second host command received by the host interface (see col.8, line 61 to col.9, line 25), here the host is the computer system 2 shown in Fig.2 which includes a number of interface means (e.g., keyboard interface, mouse interface) for generating commands (or inputting desired setting into the GUI of seek time, e.g., "Quick" seek time) for controlling the disk drive 10 in accordance with the settings in the GUI. That is, when the "Quiet" seek operation is completed, for example, the user can change the settings to a "Quick" seek operation, as desired.

Regarding claim 6, Singer discloses wherein the second means comprises a disk drive control program (see col.6, lines 2-8), here disk drive 16 is comprised of computer-executable process steps which generate a GUI for controlling operation of disk drive 10 and output commands to the disk drive 10 causing disk drive 10 to conform its operations to settings (including "Quiet" seek operation or claimed second means) in the GUI.

Regarding claim 7, Singer discloses wherein the second means comprises detection means for detecting a characteristic of the data stream, one of the quiet seek operating mode and the higher performance seek operating mode being invoked depending upon the detected characteristic (see col.6, lines 2-8 and col.6, line 59 to col.7, line 30), here the host is the computer system 2 shown in Fig.2 which includes a number of interface means (e.g., keyboard interface, mouse interface) for generating commands (or inputting desired setting into the GUI of seek time, e.g., "Quick"or "Quiet" seek time) for controlling the disk drive 10 in accordance with the settings in the GUI. The claimed detection means is inherent in Singer, since the GUI controller 29 responds to the settings (characteristic) by controlling the disk drive 10 in accordance with the settings in the GUI.

Regarding claim 9, Singer discloses wherein the second means comprises user accessible manual switch means for manually switching between the high performance seek operating mode and the quiet seek operating mode (see col.9, lines 33-45).

Regarding claim 10, Singer discloses wherein the second means comprises means for measuring an ambient acoustic level, the measuring means invoking the quiet seek operating mode whenever the ambient acoustic level reaches a selectable threshold (see at least col.19, lines 13-47).

Regarding claim 12, Singer discloses a clock means, at least one of the first and second means being responsive to a signal from the clock means to selectively switch between the higher performance seek operating mode and the quiet seek operating mode depending upon a time of day (see col.33, lines 31-65), here to determine the switch time, each next switch time is loaded into a hardware counter chip and a high frequency clock counts intervals until the desired switch time (which can be any time of day, for example) is achieved. At such time, the output of the counter chip changes and the new voltage value is output to the dusk drive system.

Regarding claim 13, Singer discloses wherein the second means defines a plurality of mutually different quiet seek operating modes, each of the plurality of quiet seek operating modes causing the drive to operate with mutually different levels of audible noise (see col.7, lines 6-50), here the sliding bar 30 moves between discrete positions on continuum 31, meaning, e.g., between a first position corresponding to high noise level/low seek time ("Quick") end 32, a second position corresponding to a mid-point between the two ends on continuum 31, and a third position corresponding to low noise level/high seek time (Quiet") end 34. Alternatively, there

may more than three discrete levels or noise and seek time may vary continuously between the two ends of continuum 31.

Since noise and seek time may vary continuously between the two ends of continuum 31, examiner reads the discrete levels on the continuum from the mid-point position to the position corresponding to low noise level/high seek time (Quiet") end 34, as defining a plurality of mutually different quiet seek operating modes wherein each of the plurality of quiet seek operating modes causes the drive to operate with mutually different levels of audible noise.

Regarding claim 14, Singer discloses a host interface and wherein the second means comprises a first host command received by the host interface (see claim 2 discussions above), the first host command including an audible noise level parameter designating one of the plurality of quiet seek operating modes (see Fig.5, col.7, lines 38-50), here the GUI include entry box 37 into a noise level value is entered and display box 39 which displays a corresponding numerical value of the seek time (e.g., an audible noise level parameter designating one of the plurality of quiet seek operating modes).

Regarding claim 15, Singer discloses wherein the second means comprises user accessible manual switch means configured to allow the user to manually cycle between the higher performance seek operating mode and each of the plurality of quiet seek operating modes (see claims 9&13 discussions).

Regarding claim 16, the claimed limitations of claim 16 are accommodated in the discussions of claims 10&13 above.

Regarding claim 17, the claimed limitations of claim 17 are accommodated in the discussions of claims 4&13.

Regarding claim 18, Singer discloses wherein a media of the disk drive is formatted into a first disk portion and a second disk portion, the first disk portion being formatted to designate the quiet seek operating mode for seek operations within the first disk portion and the second disk portion being formatted to designate the performance seek operating mode for seek operations within the second disk portion (see Fig.2,3&4, disk drive engine 16 which includes an application comprising computer code to control operation of the disk drive 10; disk drive 16 includes code for generating a GUI for interactively controlling at least one of a seek time, a noise level and a power consumption of a disk drive. The GUI includes a controller 29 that is operated by a user so as to alter settings in the GUI to alter seek time and a noise level of disk drive 10 to achieve a relatively high noise level/low seek time ("Quick") seek operation or a relatively low noise level/high seek time ("Quick") seek operation; col.6, line 33 to col.7, line 49).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singer et al in view of Sri-Jayantha et al (US 5,901,009).

Regarding claim 11, Singer fails to explicitly disclose wherein the measuring means includes a microphone. Sri-Jayantha et al teach direct access storage devices wherein a head is positioned for interaction with storage medium and wherein acoustic noise generated as a result of rapid motion of the head-actuator assembly is markedly reduced and to a method for reducing such, comprising disk drive 130 with voice coil monitor (VCM), external servo tester 132, current probe 134, current probe amplifier 138, acoustic frequency range spectrum analyzer 140 and microphone 144; col.5, line 52 to col.6, line 27), here the disk drive 130 is controlled by an external servo tester 132 which selects a particular seek characteristic to be executed by the disk drive. The current flow "I" in the voice coil motor VCM of the disk drive 130 that causes the acoustics is monitored by a current-probe 134 that is inductively coupled to a loop 136 in the VCM circuit. The output current probe 134 is provided to the input of a current probe amplifier 138. The amplifier current signal is provided as input to an acoustic frequency range spectrum analyzer 140. This amplified current signal is also provided to a sampling oscilloscope 142 which

takes and displays data in the time domain. The microphone 144 is placed in proximity to VCM of disk drive 130 in order to pick up a representative acoustic signal denoted by "A". This acoustic signal is applied in the execution of multiple seek operations.

Using microphone to pick up a representative acoustic signal during a seek operation provides the desirable advantage of facilitating the measurement of noise, for example, during seek operation to determine a "Quiet" or "Quick" mode seek operation.

It would have been obvious to modify Singer by realizing Singer with a microphone duration a seek operation, as taught by, since this provides the desirable advantage of facilitating the measurement of noise, for example, during seek operation to determine a "Quiet" or "Quick" seek mode operation.

Allowable Subject Matter

5. Claims 19-36 are allowable over the prior art of record.

6. The following is a statement of reasons for the indication of allowable subject matter: .

Regarding claim 19, the invention relates to disk drives and disk drive-containing devices that are responsive to a command from a host device, adaptively responsive to a characteristic of received data and/or to other internal or external stimuli to assume either a high performance mode where seek operations may be carried out at high speed or a quiet mode or modes of operation where seek operations may be carried out in such a manner as to generate

comparatively less audible noise than seek operations carried out when the drive is operating in the high performance mode of operation.

The closest reference Singer et al (US 6,314,473) disclose a system for altering inputs, and generating feedforward signals for a dynamic system so as to reduce unwanted vibration in the system, including speeding up computer disk drives by reducing unwanted vibrations which, if unchecked, could lead to disk read/write errors or excessive noise

However, Singer et al fail to explicitly disclose a random access video recorder/player, where the random access video recorder/player comprises, an audio codec for decoding an audio data stream input to the video recorder and player device to provide a decoded audio stream, an audio and video decompression means coupled to the disk drive and to the codec means, the audio and video decompression means decompressing the stored video and audio stream and sending the decompressed audio stream to the codec means to encode the decompressed audio stream, and a video encoder means coupled to the audio and video decompression means, the video encoder means encoding the decompressed video stream according to a selected display format.

7. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: .

Regarding claim 8, the invention relates to disk drives and disk drive-containing devices that are responsive to a command from a host device, adaptively responsive to a characteristic of received data and/or to other internal or external stimuli to assume either a high performance mode where seek operations may be carried out at high speed or a quiet mode or modes of operation where seek operations may be carried out in such a manner as to generate comparatively less audible noise than seek operations carried out when the drive is operating in the high performance mode of operation.

The closest reference Singer et al (US 6,314,473) disclose a system for altering inputs, and generating feedforward signals for a dynamic system so as to reduce unwanted vibration in the system, including speeding up computer disk drives by reducing unwanted vibrations which, if unchecked, could lead to disk read/write errors or excessive noise

However, Singer fails to explicitly disclose a disk drive that selectively provides either higher-performance seek operations or reduced-audible noise while effecting a seek operation, where the disk drive comprises wherein the second means comprises detection means for detecting a data stream length, the quiet seek operating mode being invoked whenever the data stream length reaches a threshold length.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yada (US 6,240,238) teach a magnetic disk drive capable of generating a common

servo clock signal by referring to reproduced signals from a plurality of servo areas thereby to generate a tracking control signal even with short servo areas so that a number of servo areas can be produced to achieve a sufficient tracking control capability and a sufficient recordable capacity, and the rotational speed of a magnetic disk can be reduced to record moving-image information.

Schmitz (US 5,235,482) teaches a method which reduces vibration and acoustic noise, and provides greater damping of mechanical resonances, in disk drives.

Zhu (US 5,594,595) teaches a method for testing slider/disk contact in a disk drive to detect the take off velocity for a slider in the disk drive.

10. Any inquiry concerning this communication or earlier communications from this examiner should be directed to Christopher Onuaku whose telephone number is (703) 308-7555. The examiner can normally be reached on Tuesday to Thursday from 7:30 am to 5:00 pm. The examiner can also be reached on alternate Monday.

If attempts to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Andrew Christensen, can be reached on (703) 308-9644.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry)

and (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to Customer Service whose telephone number is (703) 306-0377.

COO

6/12/02

ANDREW CHRISTENSEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600